Java programming 2_1

```
import java.awt.*;

import java.awt.event.*;

import javax.swing.*;

import javax.swing.border.*;



public class JavaBank extends JFrame {


   /**
            *
            */
           private static final long serialVersionUID = 1L;
           // Make these variables publicly available
   public String Name;
   public int Accountnum;
   public int Balance;



   // JPanel for user inputs
   private JPanel inputDetailJPanel;

   // JLabel and JTextField for account name
   private JLabel NameJLabel;
   private JTextField NameJTextField;

   // JLabel and JTextField for account number
   private JLabel AccountnumJLabel;
   private JTextField AccountnumJTextField;
```

```
// JLabel and JTextField for balance
private JLabel BalanceJLabel;
private JTextField BalanceJTextField;

// JLabel and JTextField for withdraw
private JLabel DepositJLabel;
private JTextField DepositJTextField;

// JLabel and JTextField for Withdraw
private JLabel WithdrawJLabel;
private JTextField WithdrawJTextField;

// JButton to create account
private JButton CreateAccountJButton;

// JButton to delete account
private JButton DeleteAccountJButton;

// JButton to make transaction
private JButton TransactionJButton;

// JButton to display account
private JButton DisplayJButton;

// JLabel and JTextArea to display account details
private JLabel displayJLabel;
private static JTextArea displayJTextArea;
```

```
// constants

//public  final static Maximum Accounts that can be created;

public final static int MaxAccounts = 10;



// one-dimensional array to store Account names as Empty or Used

static String AccountNames[] = new String[MaxAccounts];


// two-dimensional array to store Account details


static Account myAccounts[]  = new Account[MaxAccounts];


static int noAccounts = 0;


// constructor


public JavaBank() {

        for (int i=0; i <10; i++)  {

                    AccountNames[i] = "EMPTY";

                    //System.out.println(AccountNames[i]);


        }

   createUserInterface();

}



// create and position GUI components; register event handlers

private void createUserInterface() {
```

```java
// get content pane for attaching GUI components
Container contentPane = getContentPane();

// enable explicit positioning of GUI components
contentPane.setLayout(null);

// set up inputDetailJPanel
inputDetailJPanel = new JPanel();
inputDetailJPanel.setBounds(16, 16, 208, 250);
inputDetailJPanel.setBorder(new TitledBorder("Input Details"));
inputDetailJPanel.setLayout(null);
contentPane.add(inputDetailJPanel);

// set up NameJLabel
NameJLabel = new JLabel();
NameJLabel.setBounds(8, 32, 90, 23);
NameJLabel.setText("Name:");
inputDetailJPanel.add(NameJLabel);

// set up NameJTextField
NameJTextField = new JTextField();
NameJTextField.setBounds(112, 32, 80, 21);
NameJTextField.setHorizontalAlignment(JTextField.RIGHT);
inputDetailJPanel.add(NameJTextField);

// set up AccountnumJLabel
AccountnumJLabel = new JLabel();
AccountnumJLabel.setBounds(8, 56, 100, 23);
AccountnumJLabel.setText("Account Number:");
```

```java
inputDetailJPanel.add(AccountnumJLabel);

// set up AccountnumTextField
AccountnumJTextField = new JTextField();
AccountnumJTextField.setBounds(112, 56, 80, 21);
AccountnumJTextField.setHorizontalAlignment(JTextField.RIGHT);
inputDetailJPanel.add(AccountnumJTextField);

// set up BalanceJLabel
BalanceJLabel = new JLabel();
BalanceJLabel.setBounds(8, 80, 60, 23);
BalanceJLabel.setText("Balance:");
inputDetailJPanel.add(BalanceJLabel);

// set up BalanceTextField
BalanceJTextField = new JTextField();
BalanceJTextField.setBounds(112, 80, 80, 21);
BalanceJTextField.setHorizontalAlignment(JTextField.RIGHT);
inputDetailJPanel.add(BalanceJTextField);

// set up DepositJLabel
DepositJLabel = new JLabel();
DepositJLabel.setBounds(8, 104, 80, 23);
DepositJLabel.setText("Deposit:");
inputDetailJPanel.add(DepositJLabel);

// set up DepositJTextField
DepositJTextField = new JTextField();
DepositJTextField.setBounds(112, 104, 80, 21);
DepositJTextField.setHorizontalAlignment(JTextField.RIGHT);
inputDetailJPanel.add(DepositJTextField);

// set up WithdrawJLabel
WithdrawJLabel = new JLabel();
WithdrawJLabel.setBounds(8, 128, 60, 23);
WithdrawJLabel.setText("Withdraw:");
inputDetailJPanel.add(WithdrawJLabel);

// set up WithdrawJTextField
WithdrawJTextField = new JTextField();
WithdrawJTextField.setBounds(112, 128, 80, 21);
WithdrawJTextField.setHorizontalAlignment(JTextField.RIGHT);
inputDetailJPanel.add(WithdrawJTextField);

// set up CreateAccountButton
CreateAccountJButton = new JButton();
CreateAccountJButton.setBounds(112, 152, 80, 24);
CreateAccountJButton.setText("Create");
inputDetailJPanel.add(CreateAccountJButton);
CreateAccountJButton.addActionListener(

new ActionListener() {
  // event handler called when CreateAccountJButton
  // is clicked
  public void actionPerformed(ActionEvent event) {
    CreateAccountJButtonActionPerformed(event);
  }
}

); // end call to addActionListener

// set up DeleteAccountButton
DeleteAccountJButton = new JButton();
DeleteAccountJButton.setBounds(16, 152, 80, 24);
DeleteAccountJButton.setText("Delete");
inputDetailJPanel.add(DeleteAccountJButton);
DeleteAccountJButton.addActionListener(

new ActionListener() // anonymous inner class
    {
      // event handler called when DeleteAccountJButton
      // is clicked
      public void actionPerformed(ActionEvent event) {
        DeleteAccountJButtonActionPerformed(event);

      }

    }

    ); // end call to addActionListener

// set up TransactionJButton
TransactionJButton = new JButton();
TransactionJButton.setBounds(16, 180, 176, 24);
TransactionJButton.setText("Make Transaction");
inputDetailJPanel.add(TransactionJButton);
```

```
  TransactionJButton.addActionListener(

  new ActionListener() // anonymous inner class
       {
          // event handler called when TransactionJButton
          // is clicked
          public void actionPerformed(ActionEvent event) {
             TransactionJButtonActionPerformed(event);
          }

       } // end anonymous inner class

       ); // end call to addActionListener

// set up DisplayJButton
  DisplayJButton = new JButton();
  DisplayJButton.setBounds(16, 208, 176, 24);
  DisplayJButton.setText("Display Accounts");
  inputDetailJPanel.add(DisplayJButton);
  DisplayJButton.addActionListener(

  new ActionListener() // anonymous inner class
       {
          // event handler called when TransactionJButton
          // is clicked
          public void actionPerformed(ActionEvent event) {
             DisplayJButtonActionPerformed(event);
          }
```

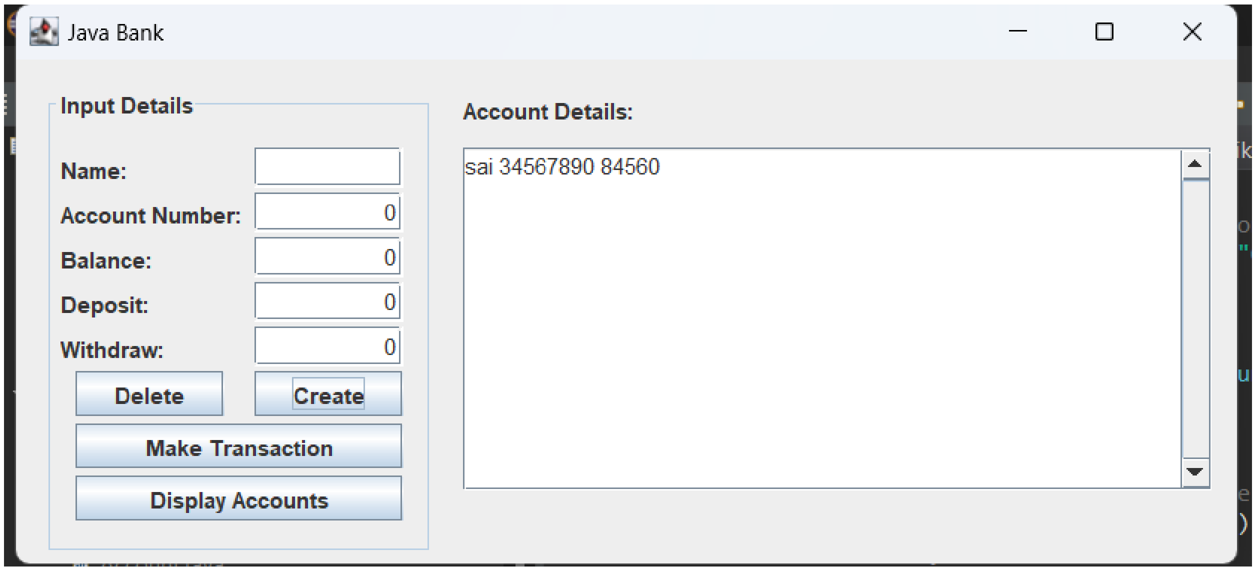
```
        } // end anonymous inner class

        ); // end call to addActionListener


    // set up displayJLabel
    displayJLabel = new JLabel();
    displayJLabel.setBounds(240, 16, 150, 23);
    displayJLabel.setText("Account Details:");
    contentPane.add(displayJLabel);

    // set up displayJTextArea
    displayJTextArea = new JTextArea();
    JScrollPane scrollPane = new JScrollPane(displayJTextArea);
    scrollPane.setBounds(240,48,402,184);
    scrollPane.setVerticalScrollBarPolicy(ScrollPaneConstants.VERTICAL_SCROLLBAR_ALWAYS);
    contentPane.add(scrollPane);
    displayJTextArea.setText("Welcome to Java Bank - There are currently no Accounts created");

   // clear other JTextFields for new data
    NameJTextField.setText(" ");
    AccountnumJTextField.setText("0");
    BalanceJTextField.setText("0");
    DepositJTextField.setText("0");
    WithdrawJTextField.setText("0");

    // set properties of application's window
    setTitle("Java Bank"); // set title bar string
    setSize(670, 308); // set window size
    setVisible(true); // display window



} // end method createUserInterface


private void CreateAccountJButtonActionPerformed(ActionEvent event) {
    // System.out.println("Create Account Button Clicked");

    displayJTextArea.setText("");



        Name = "";


        //Get Name from Text Field
        Name = NameJTextField.getText();


        //Get Accountnum from Text Field and convert to int unless blank then set to 0
        if (AccountnumJTextField.getText() == "0") {
                Accountnum = 0;
        }
        else {
                Accountnum = Integer.parseInt(AccountnumJTextField.getText());
        }



        //Get Balance from Text Field and convert to int unless blank then set to 0
        if (BalanceJTextField.getText() == "0") {
                Balance = 0;
        }
```

```
            else {
                        Balance = Integer.parseInt(BalanceJTextField.getText());
            }



        //int emptyAccount = 11;



            if ((noAccounts <= 9) & (Name != "") & (Accountnum != 0))  {
                        myAccounts[noAccounts] = new Account(Name,Accountnum,Balance);
                        AccountNames[noAccounts] = "USED";
                        //System.out.println(myAccounts[noAccounts].getaccountname());
                        //emptyAccount = i;

                        displayJTextArea.setText(myAccounts[noAccounts].getaccountname() + " " +
myAccounts[noAccounts].getaccountnum() + " " + myAccounts[noAccounts].getbalance());
                        noAccounts ++;
                        System.out.println(noAccounts);
            }
            else {
                        displayJTextArea.setText("Both the Name field and Account Number must be
completed");
            }

        if (noAccounts == 10) {
             // Once account 10 is created. All accounts full.
            displayJTextArea.setText("All Accounts Full!");
        }
```

```
 // clear other JTextFields for new data
   NameJTextField.setText(" ");
   AccountnumJTextField.setText("0");
   BalanceJTextField.setText("0");
   DepositJTextField.setText("0");
   WithdrawJTextField.setText("0");

}

private void DeleteAccountJButtonActionPerformed(ActionEvent event) {

        displayJTextArea.setText("Oops this isnt coded in this version!");
   //Name = NameJTextField.getText();
   //System.out.println("Delete Account: " + Name);

   // Enter code to delete here

    // clear JTextFields for new data

   NameJTextField.setText(" ");
   AccountnumJTextField.setText("0");
   BalanceJTextField.setText("0");
   DepositJTextField.setText("0");
   WithdrawJTextField.setText("0");

}
```

```
        private void TransactionJButtonActionPerformed(ActionEvent event) {



     displayJTextArea.setText("");


        if (noAccounts == 0) {
                displayJTextArea.setText("No Accounts currently created");
        }else {


                // get user input
       int Accountnum = Integer.parseInt(AccountnumJTextField.getText());
       int Deposit = Integer.parseInt(DepositJTextField.getText());
       int Withdraw = Integer.parseInt(WithdrawJTextField.getText());



       for (int i=0; i<noAccounts; i++) {
        if ((myAccounts[i].getaccountnum() == Accountnum) && (Deposit>0)) {
                    myAccounts[i].setbalance(myAccounts[i].getbalance()+Deposit);
                    displayJTextArea.setText(myAccounts[i].getaccountname() + " " +
myAccounts[i].getaccountnum() + " " + myAccounts[i].getbalance());
        }


        if ((myAccounts[i].getaccountnum() == Accountnum) && (Withdraw>0)) {
                            myAccounts[i].setbalance(myAccounts[i].getbalance()-Withdraw);
                            displayJTextArea.setText(myAccounts[i].getaccountname() + " " +
myAccounts[i].getaccountnum() + " " + myAccounts[i].getbalance());
        }


             }
```

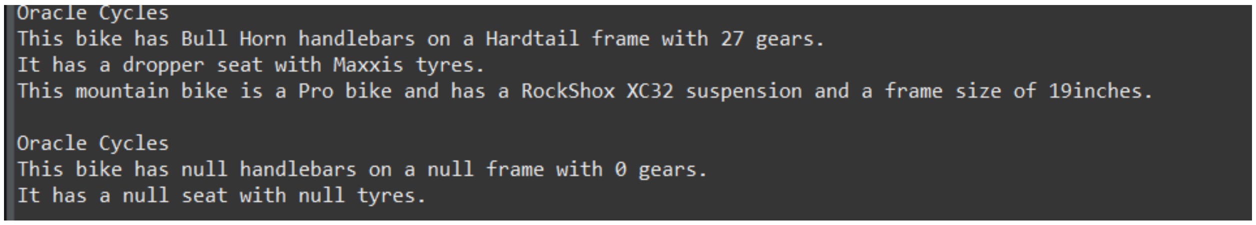
```
            }

        // clear other JTextFields for new data
            NameJTextField.setText(" ");
        AccountnumJTextField.setText("0");
        BalanceJTextField.setText("0");
        DepositJTextField.setText("0");
        WithdrawJTextField.setText("0");




    }

    private void DisplayJButtonActionPerformed(ActionEvent event) {

            Name = NameJTextField.getText();
            displayJTextArea.setText("");

            if (noAccounts == 0) {
                    displayJTextArea.setText("No Accounts currently created");
            }else {
            for (int i=0; i<noAccounts; i++) {

                            displayJTextArea.append(myAccounts[i].getaccountname() + " " +
myAccounts[i].getaccountnum() + " " + myAccounts[i].getbalance() + "\n");




            }
            }
        // clear other JTextFields for new data
            NameJTextField.setText(" ");
        AccountnumJTextField.setText("0");
        BalanceJTextField.setText("0");
        DepositJTextField.setText("0");
        WithdrawJTextField.setText("0");




    }




    public static void main(String[] args) {
        // Populate arrays with the word EMPTY
        // so we can check to see if the values are empty later

        JavaBank application = new JavaBank();
        application.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    }

}
```



Account Number: 0
Balance: 0
Deposit: 0
Withdraw: 0

```
sai 34567890 84560
```

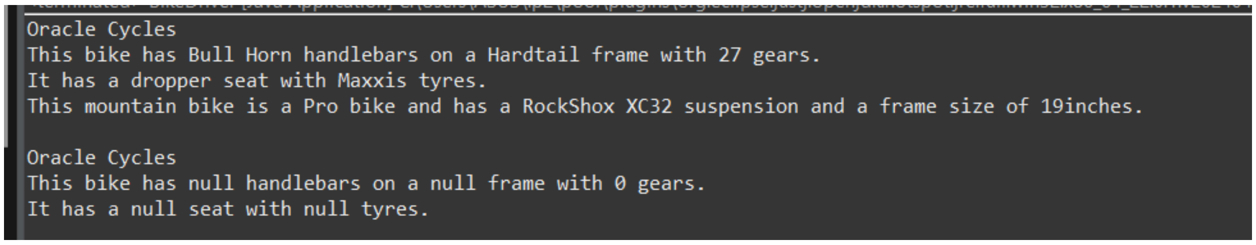
```
package bikeproject;

public class BikeDriver {

        public static void main(String[] args) {

                RoadBike bike1 = new RoadBike();
                RoadBike bike2 = new RoadBike("drop", "tourer", "semi-grip", "comfort", 14, 25, 18);

                MountainBike bike3 = new MountainBike();
                Bike bike4 = new Bike();


                bike1.printDescription();
                bike2.printDescription();
                bike3.printDescription();
                bike4.printDescription();
        }//end method main

}//end class BikeDriver
```



```
Oracle Cycles
This bike has Bull Horn handlebars on a Hardtail frame with 27 gears.
It has a dropper seat with Maxxis tyres.
This mountain bike is a Pro bike and has a RockShox XC32 suspension and a frame size of 19inches.

Oracle Cycles
This bike has null handlebars on a null frame with 0 gears.
It has a null seat with null tyres.
```

```
package bikeproject;


public class MountainBike extends Bike{


        private String suspension, type;

        private int frameSize;


        public MountainBike()

        {

                this("Bull Horn", "Hardtail", "Maxxis", "dropper", 27, "RockShox XC32", "Pro", 19);

        }//end constructor


  public MountainBike(String handleBars, String frame, String tyres, String seatType, int numGears,

                            String suspension, String type, int frameSize) {

                super(handleBars, frame, tyres, seatType, numGears);

                this.suspension = suspension;

                this.type = type;

                this.frameSize = frameSize;

        }//end constructor


        public void printDescription()

        {

                super.printDescription();

                System.out.println("This mountain bike is a " + this.type + " bike and has a " +
this.suspension + " suspension and a frame size of " + this.frameSize + "inches.");
```

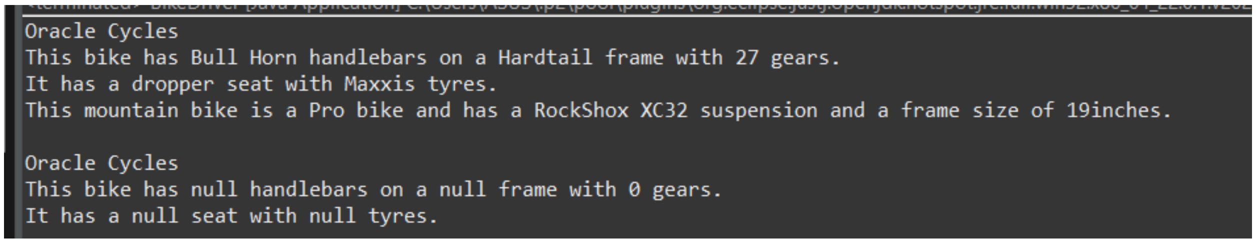
```
        }//end method printDescription
}//end class MountainBike
```



```
Oracle Cycles
This bike has Bull Horn handlebars on a Hardtail frame with 27 gears.
It has a dropper seat with Maxxis tyres.
This mountain bike is a Pro bike and has a RockShox XC32 suspension and a frame size of 19inches.

Oracle Cycles
This bike has null handlebars on a null frame with 0 gears.
It has a null seat with null tyres.
```

```
package bikeproject;


public class RoadBike extends Bike{


        private int  tyreWidth, postHeight;


        public RoadBike()
        {
                this("drop", "racing", "tread less", "razor", 19, 20, 22);
        }//end constructor


        public RoadBike(int postHeight)
        {
                this("drop", "racing", "tread less", "razor", 19, 20, postHeight);
        }//end constructor


        public RoadBike(String handleBars, String frame, String tyres, String seatType, int numGears,
                        int tyreWidth, int postHeight) {
                super(handleBars, frame, tyres, seatType, numGears);
                this.tyreWidth = tyreWidth;
                this.postHeight = postHeight;
```

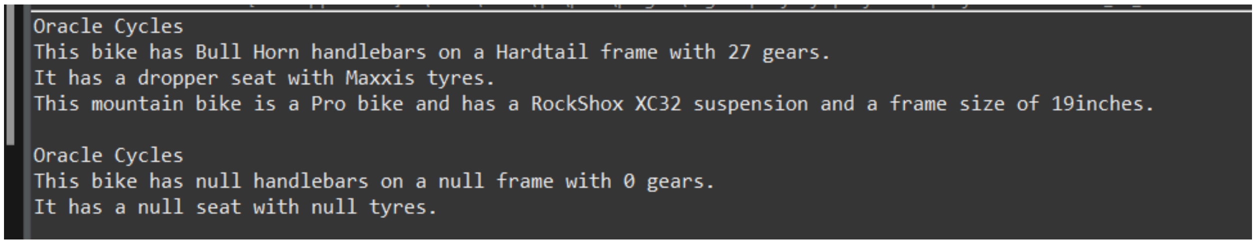
```
	}//end constructor


	public void printDescription()

	{

		super.printDescription();

		System.out.println("This Roadbike bike has " + this.tyreWidth + "mm tyres and a post
height of " + this.postHeight + ".");

	}//end method printDescription

}//end class RoadBike
```



```
Oracle Cycles
This bike has Bull Horn handlebars on a Hardtail frame with 27 gears.
It has a dropper seat with Maxxis tyres.
This mountain bike is a Pro bike and has a RockShox XC32 suspension and a frame size of 19inches.

Oracle Cycles
This bike has null handlebars on a null frame with 0 gears.
It has a null seat with null tyres.
```

```
package bikeproject;


public class Bike {


	private String handleBars, frame, tyres, seatType;

	private int NumGears;

	private final String make;


	public Bike(){

		this.make = "Oracle Cycles";

	}//end constructor


	public Bike(String handleBars, String frame, String tyres, String seatType, int numGears) {

		this.handleBars = handleBars;

		this.frame = frame;

		this.tyres = tyres;
```

```
                this.seatType = seatType;

                NumGears = numGears;

                this.make = "Oracle Cycles";

        }//end constructor


        protected void printDescription()

        {

                System.out.println("\n" + this.make + "\n"

                                        + "This bike has " + this.handleBars + " handlebars on a "

                                        + this.frame + " frame with " + this.NumGears + " gears."

                                        + "\nIt has a " + this.seatType + " seat with " + this.tyres + "
tyres.");

        }//end method printDescription


}//end class Bike
```



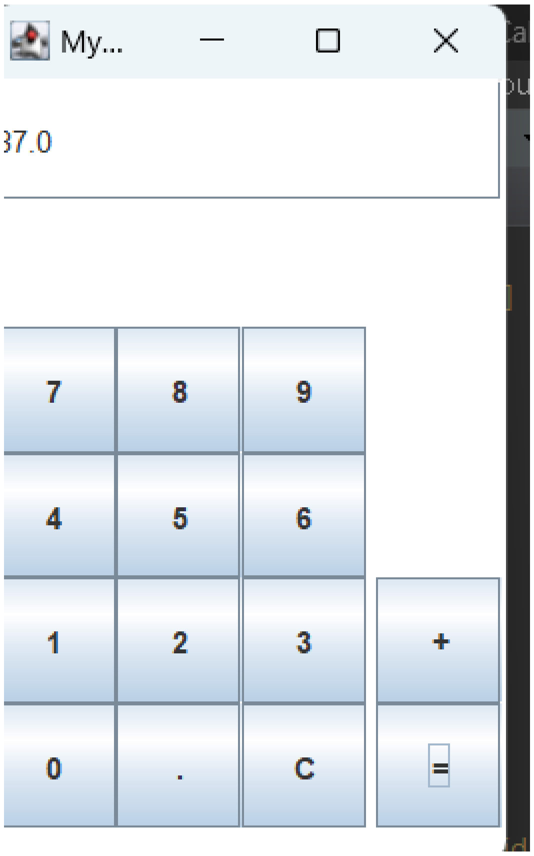
```
Oracle Cycles
This bike has Bull Horn handlebars on a Hardtail frame with 27 gears.
It has a dropper seat with Maxxis tyres.
This mountain bike is a Pro bike and has a RockShox XC32 suspension and a frame size of 19inches.

Oracle Cycles
This bike has null handlebars on a null frame with 0 gears.
It has a null seat with null tyres.
```

```
package helloworld;


import javax.swing.*;

import java.awt.Color;

import java.awt.event.ActionEvent;

import java.awt.event.ActionListener;
```

```
public class CalcPanel extends JPanel implements ActionListener {
    String num1 = "";
    String num2 = "";
    String operator = "";
    boolean usingFirst = true;
    double total = 0;
    JTextField display;
    JButton b1, b2, b3, b4, b5, b6, b7, b8, b9, b0, bdec, bclear, bequals, bplus;

    public CalcPanel() {
        this.setBackground(Color.white);
        setLayout(null);
        display = new JTextField();

        b1 = new JButton("1");
        b2 = new JButton("2");
        b3 = new JButton("3");
        b4 = new JButton("4");
        b5 = new JButton("5");
        b6 = new JButton("6");
        b7 = new JButton("7");
        b8 = new JButton("8");
        b9 = new JButton("9");
        b0 = new JButton("0");
        bdec = new JButton(".");
        bclear = new JButton("C");
        bequals = new JButton("=");
        bplus = new JButton("+");
```

```
display.setBounds(0, 0, 205, 50);

b1.setBounds(0, 200, 50, 50);
b2.setBounds(50, 200, 50, 50);
b3.setBounds(100, 200, 50, 50);
bplus.setBounds(154, 200, 50, 50);

b4.setBounds(0, 150, 50, 50);
b5.setBounds(50, 150, 50, 50);
b6.setBounds(100, 150, 50, 50);

b7.setBounds(0, 100, 50, 50);
b8.setBounds(50, 100, 50, 50);
b9.setBounds(100, 100, 50, 50);

b0.setBounds(0, 250, 50, 50);
bdec.setBounds(50, 250, 50, 50);
bclear.setBounds(100, 250, 50, 50);
bequals.setBounds(154, 250, 50, 50);

add(b1);
add(b2);
add(b3);
add(b4);
add(b5);
add(b6);
add(b7);
add(b8);
add(b9);
```

```
    add(b0);
    add(bdec);
    add(display);
    add(bclear);
    add(bequals);
    add(bplus);

    b1.addActionListener(this);
    b2.addActionListener(this);
    b3.addActionListener(this);
    b4.addActionListener(this);
    b5.addActionListener(this);
    b6.addActionListener(this);
    b7.addActionListener(this);
    b8.addActionListener(this);
    b9.addActionListener(this);
    b0.addActionListener(this);
    bequals.addActionListener(this);
    bplus.addActionListener(this);
    bclear.addActionListener(this);
    bdec.addActionListener(this);
  }

  public void actionPerformed(ActionEvent e) {
    String s = e.getActionCommand();
    if (s.equals("1") || s.equals("2") || s.equals("3") || s.equals("4") ||
      s.equals("5") || s.equals("6") || s.equals("7") || s.equals("8") ||
      s.equals("9") || s.equals("0") || s.equals(".")) {
      if (usingFirst) {
            num1 = num1 + s;
            display.setText(num1);
        } else {
            num2 = num2 + s;
            display.setText(num2);
        }
    }
    if (s.equals("+")) {
        usingFirst = false;
        operator = "+";
    }
    if (s.equals("=")) {
        switch (operator) {
            case "+":
                total = Double.parseDouble(num1) + Double.parseDouble(num2);
                display.setText("" + total);
                break;
        }
        usingFirst = true;
        num1 = "";
        num2 = "";
        operator = "";
    }
    if (s.equals("C")) {
        display.setText("");
        usingFirst = true;
        num1 = "";
        num2 = "";
        total = 0;
        }
    }

    // Main method to run the CalcPanel class
    public static void main(String[] args) {
        JFrame frame = new JFrame("Calculator");
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        frame.setSize(220, 350); // Adjust size as needed
        frame.add(new CalcPanel());
        frame.setVisible(true);
    }
}
```



My...
37.0
7
8
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